Recd March 12th
Ans " 13th "

Wilmington Del
March 7th 1862

Dr George Engelmann
Dear Sir

I take the liberty of sending you two species of Cuscuta of the names of which I am uncertain. No 1 was communicated by Mr S. H. Watson of Madison, Wisconsin, under the name of C. umbrosa, Bey. No 2. I collected in the Pine barrens of New Jersey and have supposed it might be a form of C. compacta, Juss.; but it differs somewhat from the plant of this neighborhood especially in the very long cylindrical tube of the corolla and the more pointed pod. The clusters are also less dense. If you will be kind enough to send me the names I shall be much indebted & am

Yours truly
Wm M. Canby

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Recd Oct 30th
Ans Nov 1st

Chaddsford P.O. Delaware Coy Penna
Oct 27th 1862

Dr George Engelmann,
Dr Sir,

Enclosed are specimens of two plants; one a Cuscuta, which I have supposed to be your C. chlorocarpa, and which I collected last month in the Pine Barrens of New Jersey. Many of the flowers were 3-parted; others 4-parted. — The other, collected on the shores of the Delaware near low water mark, in New Castle Coy, Delaware, I have taken for your Isoetes riparia. As I wish to send out specimens in the way of exchange, you will greatly oblige me, by informing me if I am correct in the above names. Also, whether you still hold the Hypericum gymnanthum, Engelm & Gray, Plts Lindh, (which I have collected in Delaware this season, fide Dr Gray), to be

sufficiently distinct from H. mutilum? Dr Gray is not satisfied that it is, but if not, it seems to me to deserve some attention as a *marked variety*.

Very Respectfully
Yours,
Wm. M. Canby

MISSOURI BOTANICAL GARDEN
ARCHIVES

Recd May 31st
Ans same day

Chadds ford Dela Coy Penna
May 26th 1863

Dear Sir;

Having been desired by Mr Durand through Edward Tatnall, to get some specimens of Pines in a flowering state and send to you, I have today collected some of P. rigida & P. inops, which are the only species which grow in this neighborhood. I will send them with this tomorrow. I also take this opportunity to say, in answer to a request made last winter, that I have ~~seen~~ seen the pubescent var. of Sagittaria variabilis growing, and will endeavour to get some for you this summer.

Very Resp Y.
Wm M. Canby

Dr Engelmann

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Rec'd June 19th
Ans Aug 8

Chadds ford June 15th 1863

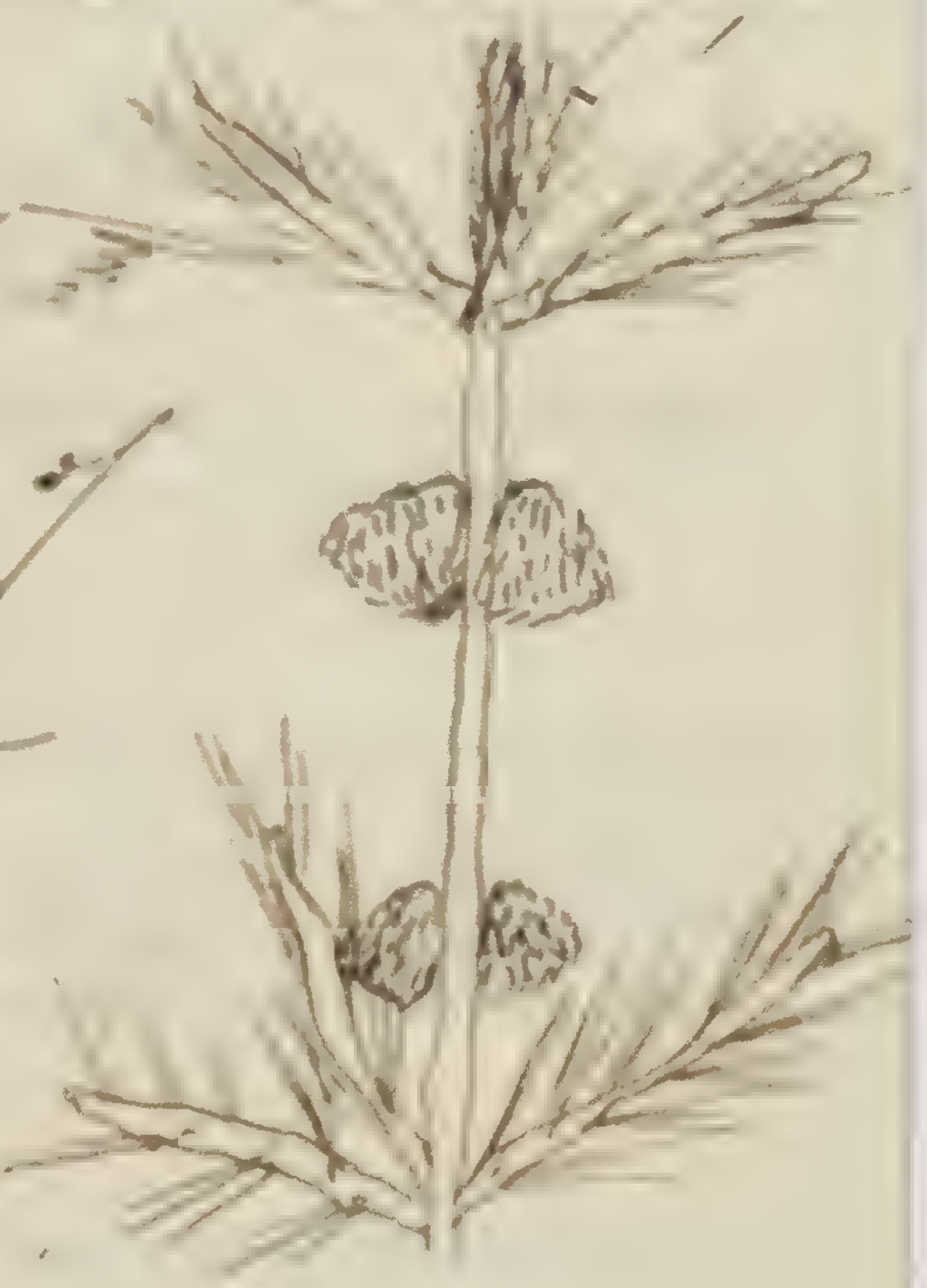
Dr Engelmann

Dear Sir

I have your favor of May 31st and the pamphlet, which is very interesting & useful, especially the part relating to Parry's & Hall & Harbour Pls, and for which I am truly obliged. In answer to your request for specimens, I send what I have been able to procure, viz., male fls of both Larches, ditto of P. Strobus, - ditto of Abies Canadensis, & A. balsamea, fls of A. alba, and fls of a pine, called by a Nurseryman P. pumila, but? It is ~~seemingly~~ nearly allied to P. sylvestris, but as far as the flowers are concerned, differs in the~~ir~~ female ones being on erect pedicels, which, however, in fr are recurved. You are doubtless well acquainted with it. It flowers when 4 ft high. With regard to the

|| fem. fls of Pinus inops & rigida, being la-

teral, I have long noticed it and have supposed it might be the case with other species, and that, "fertile catkins terminal", might be one of the loose descriptions often met with. During a day's botanizing in the Barrens of N.J. last week, I paid special attention to these two species above mentioned, and am able to say in regard to them, that they very rarely indeed have the female fls terminal,— as near as I could judge, not more than once in a hundred cases. Generally the fls were from 1 inch to 6 inches below the summit of the shoot,— sometimes more than the latter, and more rarely, less than the former. I also looked at the old cones which are very persistent, and verified the above. Sometimes the next spring, after the fem. fls. are formed, a small shoot or two (generally in case there is but one cone), shoot out opposite the cone, and thus gives a slight appearance of the cones being terminal, which however close examination readily shows not to be the case. In two cases I noticed cones of the same year, at different heights on the same shoot, as I have endeavoured to show; — both, I believe being specimens of P. rigida. Generally, just where the female fls. appear ~~to~~ on the shoot, there is an absence of leaves. and I frequently noticed this absence on shoots, upon which there were no flowers, just as if something had prevented the cone bud, from developing. The shoot (the leaves being young) would have somewhat this appearance.



I enclose three other specimens; viz. a Juncus. from dry ground Camden N.J. A European grass introduced with lawn grass seed: and a plant collected on cliffs, on the New River. Mont-

growing bog of Virginia, in August, 1858.
The latter was sent to Dr Gray through Mr Tatnall but was returned without name.

There seems to be such a general resemblance to Pachystima Myrsinites, Raf. (No 92. Hall & Harbour) that I send it thinking you may make something of it.

Please inform me of the name of the above and oblige, Yours, truly,

Wm. M. Canby

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GEORGE ENGELMANN PAPERS

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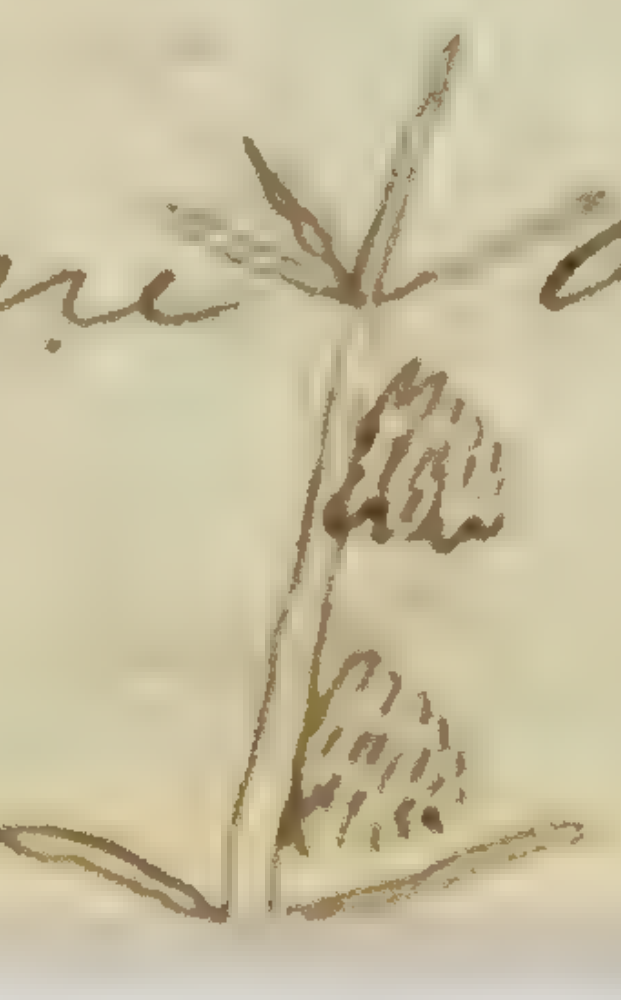
Recd July 31st
Ans Aug 8

Chaddsford July 27th 1863

Dr Engelmann

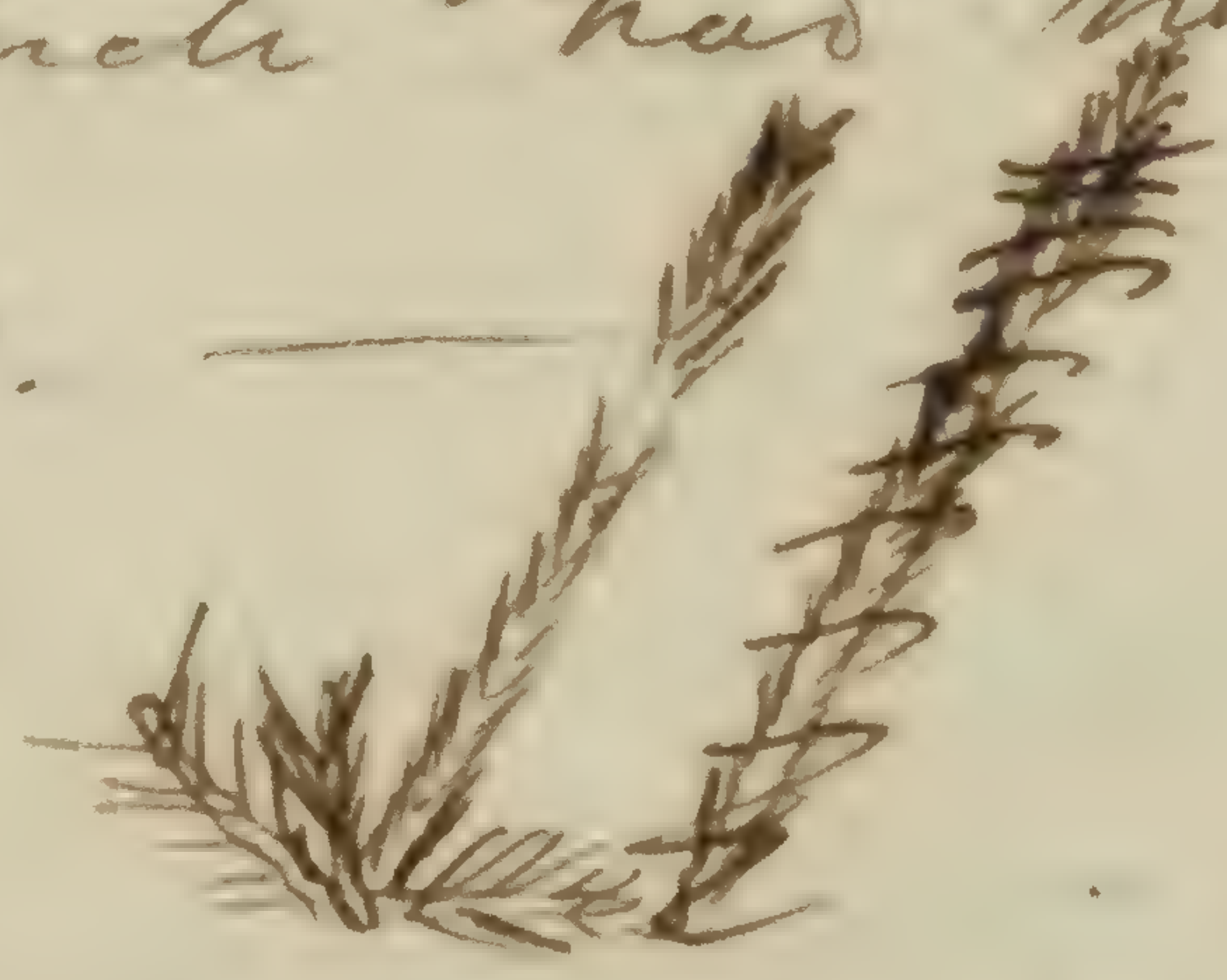
Dr Sir

Five or six weeks since I sent to you a letter, enclosing specimens of several species of Abietinae, in answer to your request of May 31: I also sent notes of observations on two species of Pinus; viz, inops, & rigida: there were also enclosed, specimens of an introduced European grass, a Juncus, and a plant collected on the Mts of S.W. Virginia in 1858. As I have not since heard from you, I conclude that this package has not been received, and I regret the loss very much, especially as I have mislaid my note-book, and shall have to write of Pinus inops & rigida from memory; and still more so on acc of the Virginia plant, which Dr Gray sent back to Mr Tatnall, (though whom I sent it to him) without name. It was without fl or fr, but so strongly resembles Pachystima myrsinites, Raf. (which I have first seen in Hall & Harbour's Coll.), that I wished to have your opinion on it. I will try to send you one of the two specimens I have left, by some safer opportunity than the mail, as also other specimens. With regard to the two Pines, the gist of my observations, made during a Botanical excursion to N.J. was, that the female fls are terminal in not more than five cases in every hundred, that they are usually, from one to six inches below the summit of the shoot, and oftener more, than less, the average distance. This was evident as much from the old cones, as from the fls, and in two cases, (both I think of P. rigida), there were two cones on the same shoot, one some distance above the other: as



Sometimes the

next year after the flowers are formed, a small shoot puts out opposite the cone or cones, which gives them a slight appearance of being terminal, which however close observation shows not to be the case. In other cases I noticed a space on the young shoot, clear of leaves, looking as if intended for flowers, which had not developed. Somewhat thus. — I am inclined to think Pinus Taeda may come under the same rule, though perhaps not in so great measure. Two days since I collected specimens from young trees, in central Delaware, some of which I enclose. The fls are probably too old to be of use.



The above facts seem very interesting, taken in connection with Darwin's theory.

I enclose also a Cuscuta collected in New Castle Co, Del, which

I suppose to be C. arvensis. Beyr.,
I should be glad to be certain of
this. I have my eye on a small
lot of Sagittaria variabilis var.
pubescens which I hope to get
for you.

Very Respectfully
Wm. M. Canby

Recd Aug 28th
Ans Sept 29th

Chaddsford Aug 25th 1863

Dr Engelmann

Dr Sir

I have your favor of the 8th inst and am obliged for the names of plants sent to you, as well as for the two list of different flowering Pines which is very interesting. I expect to leave in a few days for a Botanical tramp in the lower part of Delaware & the Eastern Shore of Maryland & perhaps Virginia and will pay particular attention to the Pines which may be expected to be met with there including I hope P. mitis which I have never seen. I do not think I have at present such Specimens of the different pines sent you as you desire but will endeavor to get them. Of the Specimens sent

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you Abies balsamea Larix Americana *L. Europaea* (I do not remember sending any under the name of *L. pendula*) Picea alba and (of course) Pinus Pumilio were cultivated. Abies Canadensis & the remainder native. I have not noticed any difference in the foliage of Picea alba.

In looking up the Sagittariae I find a var. of S. variabilis ~~fo~~ with very long bracts looking very different from the ordinary orbicular or ovate ones; and these so far as I have been able to observe are accompanied with squarrose or comose heads of fruit as in the specimen enclosed while the ordinary form has the achenia ~~f~~ and their beaks closely compacted into a somewhat smooth & polished head. I mention this as I have not seen it noticed in the few works ~~to~~ which I have access

I have the flowers of this form and of var pubescens in alcohol for you.

I have been desirous for some time of meeting some one who would give me the plants of Missouri and the country Westward & Southward in exchange for those of the Eastern portion of the country. If you know of or should meet with such a person I should feel much indebted if you would place us in correspondence.

Very Respectfully
Wm M. Canby

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Recd Oct 14th
Ans Nov 6

Chaddsford Oct 1st 1863.

Dear Sir,

On my return from Maryland, I received yours of the 29th ult. I can send you good specimens of Pinus Taeda, & P. mitis, with seeds of the former. P. serotina, Mx. I am not at all acquainted with, as distinct from P. rigida, but will look more closely at trees around here. I notice that Chapman keeps them separate. Whatever else I can, that would be of service to you, I will send.

I did not suppose there were any Botanists, who were at present collecting in Missouri or Westward: But I supposed there might be some one in St Louis or vicinity, who had collected there before the troubles, and might have duplicates to spare for Eastern plants. I shall indeed be truly obliged for

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anything you may send me, if your engagements will permit you to do so. While down below I collected a number of interesting plants, several of which are not in Gray's Man'l. I had intended to put in specimens of these with the Pines & Sagittaria to send to you, but will add other plants which I collected, & which may be acceptable on acc't of locality or as good specimens. The plants not in Gray are as follows — Hydrocotyle repanda — Elephantopus tomentosus — Pluchea bifrons — Mentha — perhaps aquatica L. or a nearly allied species — Alnus — in full flower on Sept. 1st — Cephaloxys flabellata — Scirpus —— Aristida lanata —

Of other plants rare or not commonly found so far north, I have Polypremum procumbens — Tephrosia spicata Desmodium humifusum D. lineare — Chrysopsis graminifolia (beautiful specimens)

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Paspalum Walterianum &c.

I early engaged a set of Hall's Plants, and have enjoyed that fine collection much. I am exchanging with Mr Hall the present season.

I will soon send on what I have for you.

Very Respectfully Yrs,
Wm. M. Canby

Dr Geo. Engelmann
St Louis.

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Rec. Octob 31st
Ans Nov 6

Chaddsford Oct 27th 1863

Dr Engelmann

Dear Sir

I shall start to-morrow a package to you by Express containing such specimens of Pines as I could procure; some Sagittariae with some flowers &c in alcohol; and an assortment of plants principally gathered on the Eastern Shore of Maryland among which I hope you may find something interesting. Among these are some concerning which I should like to have your opinion; such as Hydrocotyle vulgaris (fide Gray) the Cuscutae, Andropogon argenteus, Ell.? which Chapman calls A. Elliottii &c &c. Others are merely sent on acc of being new to the northern States. One plant Dr Gray thinks is a new species, viz, the Scirpus! I have not sent many

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specimens not wishing to encumber you with useless lumber. But if you wish anything more I shall probably send a package before long to Mr Hall and could enclose anything you might desire to be forwarded by him.

Respectfully Yours,
Wm M. Canby

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Rec^d Dec 22^d
ans Dec 23^d

Chaddsford Penn^a Dec 15^th 1863

Dr Engelmann

Dr Sir

Mr Bolander of California writes me, that he has a parcel of plants for you, one for Mr Hall, & one for myself. He says that the rates by express are very high, & wishes to know whether we cannot "come to some understanding about it", I presume with the view of getting them in cheaper; "else" says he "I would propose sending them around Cape Horn". Will you be kind enough, as you have had much experience in receiving plants from abroad, to give me your opinion on the subject.

Yours of the 6^th ult was received. The Isoetes was from a tide water shore, – alternately laid bare & covered. I presume the leaves were bent by the mud deposited by the tide. I found no larger specimens. I lately sent Mr Durand some specimens from Delaware, which he pronounces to be the true I. Engelmannii. I will try to get some next summer.

Pinus australis we are probably too far north for. P. serotina I will endeavor to find in future.

Among the plants last sent you, was a Hydrocotyle, which Dr Gray thought might be H. vulgaris. On showing it to Durand, he said "No", and showed me Lamarck's plate, which certainly did not look like our plant. But I have since seen in Herb. Darlington, a specimen from Hooker, and specimens from Cape May N.J. gathered by D. Townsend, which seem, the latter especially, much like my plant, and all labelled H. vulgaris. You must be well acquainted with this species, and I would feel greatly obliged for your opinion.

Very Respectfully
Wm. M. Canby

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Recd Jan 18th
ans Jan 29d

Chaddsford Jan. 12th 1864

Dr Engelmann

Dr Sir

I am obliged for yours of the 23 ult.

With regard to Quercus heterophylla, Mx. I have never felt entirely satisfied about its being a hybrid. Until ~~this~~ last fall, I had never seen *native* *fruiting* specimen. Last Oct., a friend of mine found a large tree 30 to 40 ft high full of fruit. It was too late to get anything but detached leaves, some of which, with the acorns, I enclose. With my very limited knowledge of Q. aquatica Catesby, I should not have suspected them to be vars. of one species. Q. laurifolia I do not at all know. If you desire, I will try to get specimens of all for you next season.

In looking in some of the Herbaria, (but cursorily,) at the (so called) Hydrocotyle vulgaris

& H. interrupta. I have noticed forms from the South, which seemed somewhat intermediate. I hope you will look them up. I have no specimen of Crantzia lineata, but have heard of its being found on the Susquehanna, by Mc Minn of Williamsport Pa. I will write to him to see if I can get a specimen for you. I enclose the best specimen I have of ~~the~~ my H. vulgaris ?, (Maryland), and also one of H. ranunculoides, to show that I have not mistaken that species.

Alnus maritima, Muhl. There is nobody in Salisbury who is able to distinguish this from A. serrulata, with which it grows in company. I intend, if possible, to look it up carefully next season. We found it last fall in full flower, everywhere, on the 1st Sept. Visiting the same localities in the middle of the same month the sterile catkins had all withered, or fallen. If a precocious blooming, why showed not the flowers have lasted until later in the season? Again going over the same ground on Oct 1st, not preparations were visible for spring-flowering, though the young catkins of A. serrulata were well formed. Glad to have a certification of Andropogon Elliottii.

I shall be truly obliged for the Opuntias, but hope you will not send them until we get over this terribly severe weather, or I am afraid they will never grow. I think I can send you O. vulgaris in the Spring.

Mr Tatnall, though retaining some interest in Botany, has practically almost given it up. He is engaged in the Nursery Business, and I doubt not finds it better for the pocket than Botany.

Hastily but truly Yours
Wm M. Canby

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Rec May 7th
Ans Octob 18th

Chaddsford Penna May 4th 1864

Dr Engelmann

Dr Sir.

Your letter and the parcel containing four species of Opuntia, were duly received. Please accept my sincere thanks. I have planted them in a dry sandy place, and hope to see them grow.

With respect to the Pines. I shall always be glad to be of any service I can.

If you have the work please turn to p. 20 of Marshall, Arbustum Americanum and see that old Botanist's notice of what must be Alnus maritima, Muhl.; and in which he states that it flowers in August!

Very truly Yours

Wm. M. Canby

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Recd Jun 21st
Ans 23d

Wilmington June 16th 1866

My Dear Sir

I write in haste to say that I received your favor this morning, and have just done up and despatched a package of Isoetes to Dr. E., I believe all I send to be of the one species, I. Engelm.: but as I got them from 3 different places, I have tied a small string around each set. Please inform Dr E. of this.

I have not seen the Dr's Monograph of our Junci.

With best wishes
Cordially Yours
Wm M. Canby

E Durand Esq
St. Lawrence Hotel, Phila.

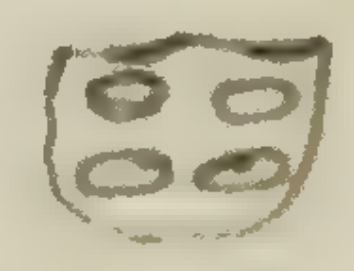
Recd July 3d
Ans. July 5

834 Market St. (Wilmington D.
June 29th 1866

My Dear Sir,

Your favor of the 25th inst and the copy of St. Louis Trans. mailed to Chaddsford reached me the same day. The next day came the copy which you mailed to this place. For this very kind attention I thank you most sincerely, but more than all else, and in common, I feel sure, with all our botanists, do I thank you for the effectual clearing up you have given to our species of the hardly used, and hitherto puzzling genus Juncus. I confess for one that I have always had a vague dread of even trying to get the few species I have collected into any satisfactory state ~~hitherto~~ of arrangement, not alone because different species were confounded together, but also on acc of the great confusion in the synonymy. It has doubtless been a work of very great labor for you, but now that it is done you must feel repaid by the satisfaction of full success. I should have been most glad to have done anything I could to forward your work. Last year & the year before I was in very bad health but am now much better. A few days since while on a visit to Lewestown Del, with Dr. Leidy & Co, I collected a few species of Juncus of which I will forward you some in a day or two. Among these is J. dichotomus, Ell. which is plentiful there. I am very glad to see that you keep this distinct from I. Amies. Mr. Bebbe's remarks as ~~th~~ ~~to their~~ different appearance while growing are correct. I should not wonder to hear of the species being found in N.J.

Have you sent Mr. Commons a copy of the transactions? If not I might hand him the extra one.

Being on the shore of Delaware river today, I took the opportunity of collecting what we have always considered true Isoetes riparia — in fact it was so pronounced by you a few years since. I ~~enclose~~ ~~you~~ send some by same mail as this. I have no moss to put them in but hope they may reach you tolerably fresh. ~~Ar~~ This is in every respect I think, identical with Mr. Durand's plant from further up the river. I find it as you describe the plant I sent you before. The leaves are nearly plane on the upper surface, but when fresh I thought there was a slight rise in the middle and depression on each side of it as in sketch of cross section  these probably caused by the underlying cells with cross partitions. By the way do these number four in all species. The section of bulb, ligulae, is just as you describe. I saw no growth of more than two years

Recd July 3d 1866

Is the plant a biennial? Growing one year & fruiting the next? Some of the specimens look as if they must have been very small, (judging from the cott-stalk) last year. As soon as I can I will collect I. Engelmanni and compare. But M. Durieu says I have collected here three species one of which he calls *I. muricata* — distinguished by the spores being muricate instead of reticulate. I have not yet been able to identify it; but have it from Wm Boott Esq of Boston. The plants I now send grow in the mud clay, or gravel, of the Delaw[illegible] shore, *below* high water mark about 1/3 imbedded - leaves always erect somewhat fan like in arrangement above the mud (up & down stream) which I attribute to the tidal action. The other plants, sent before, grew in ditches & swamps where 2/3 was out of the water. The places _might_ be dry part of the year. Leaves erect. Should think the two possibly grew together - Leaves not floating in these though we have such a species. Length from 6 to 18 inches - I will look more carefully & get more. Those I sent were from three places - a string around each lot. Did you notice this? It would have shown whether the two grew together or not. I am much pressed for time & must close but will always be glad to do the best I can for you. Truly Yours

Wm M. Canby

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Rec July 16th
Ans Aug 13

834 Market St Wilmington Del
July 12 1866

My Dear Sir,

I have your fav of 5th inst., and send to day some Junci by same mail as this: but first as to Isoetes.

The three ~~package~~ parcels in one package I sent first, were from three different localities, but all grew alike and in similar stations. The leaves are always erect even when the water is very shallow, & were when I got them 2/3 to 3/4 emersed. I once found a plant which grew in shallow water, (a ditch), in which the leaves were very flaccid, & spread out in every direction on the surface of the water or just under. I did not succeed in finding it last year but intend to try this. Mr. Commons has sent you one he found this spring on a damp place on an otherwise very dry shady & rocky hillside. I have not seen it on the river shore. I. riparia is an erect plant at least when uncovered by the tide. So I think I may say that I have seen no intermediate states between that & the stagnant water plant. As to I. muricata Durieu I can only say that M. Durieu wrote to Mr. Durand that he had rec. this from Mr. Boott of Boston and had also got a specimen among others from me. I had had no communication with Mr. Boott before M. Durieu wrote; neither I think had Mr. Durand. If mixed by mistake I think it must have been by Mr. Durein.

I am sorry the last lot of plants did not carry so well as the first. The reason was I had no moss to put the last in. So far as I can possibly find time I will look up these plants and take notes when collecting & remit to you. Unfortunately I expect to have to go on to N. England (Isles of Shoals) to spend a month or two shortly; this will sadly interfere with many of my plans.

I do not go often now to Chaddsford which was the reason I did not get the first copy of Transactions St Louis Acad. which you sent. I passed the duplicate one to Mr. Commons.

Now for the Junci.

I find I cannot find time to examine them as I wanted to before sending: so I send all I have collected this year numbering each lot and putting note of locality below. A few may be of service and the rest can be thrown away, but as I have retained one or two specimens of each lot I would be glad to have your names for them ~~to~~ if not too much trouble. I think you will see among them the real J. dichotoma, as well as sea shore varieties. I wish I could (as you ask for it) promise to get you this; if I can I will, but for reasons above mentioned it is very doubtful if I can. I wish [illegible] to Nuphar when collecting.

I enclose my photograph. I don't do this to make you feel under obligation to return yours but if you will I shall feel very glad and obliged and will put it among your correspondents, Truly Yours
Wm M Canby

Rec'd July 20
Ans Aug 13

Wilmington July 17th '66

My Dear Dr. Engelmann

Yesterday I took advantage of the only opportunity I have had or probably shall have this season to go to the ditch I wrote about where I found Isoetes with flaccid leaves. When I went before it was in the fall as I remember gathering acorns of Quercus heterophylla which had fallen from the tree. Yesterday I found the late very hot & dry weather had dried up the ~~do~~ water from the ditch leaving it only slightly damp and clay soft in some places. But two specimens of Isoetes were found and these I send today. Not having more I have not cut them up and consequently have not given them close examination. The leaves were now quite erect though I have no doubt at all that these are of the same species as those I found before in water with the leaves spread in every direction. There is scarcely any trace of the old part of the bulb while the sporangia seem just mature on the outside. But how about those ~~with~~ in the centre. Please notice the small light green & apparently young leaves there.

Now I think that when I procured it before ~~that~~ the sporangia were hardly mature though it must have been the last of Sept. when gathered. I have wondered whether it were possible that these centre sporangia continue to mature until fall then remain dormant through winter & become fully ripe say in July at the same time that a young central growth pushes them off the crown (as it were). I am aware that it is said that the outside sporangia contain the macrospores while the inside ones contain the microspores. But I think I see sporangia containing each ~~see~~ among the outside ones; and in I riparia I have seen some plants, the sporangia of which all contained the smaller spores. You can judge of all this when

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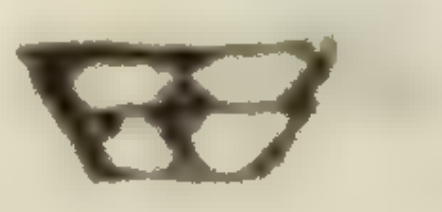
you cut them up. I remark one other point. The leaves of the river-side I. riparia seemed to be in cross-section nearly semicircular in shape thus – –; while these seem more dish shaped, thus – : the air-cavities also seem to me to be larger.

Excuse my careless writing, it is *necessary* for me to be in haste.

Faithfully Yours

Wm. M. Canby

Dr Geo. Engelmann
St Louis, Mo.

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Rec^d July 27
Ans Aug 13

Wilmington July 24th 1866

My Dear Sir!

Yesterday I took my last chance to visit the Isoetes localities from which I sent you the first lot. Though I could not do as much as I desired on account the approach of night, I collected some which I have put up and send by mail today. First, in the bottom of the box are 5 or 6 large specimens, (two of them very large), from the 2nd locality which I sent from before. The 1st locality is close by, in fact is the same, not being 20 yards from the second, and all in the same swamp. It was too dark to see any thing in it, being more shaded, so I got nothing there; but I suppose the plants from these two localities in the

first lot sent)
were identical, so it does not much matter. These plants were in the mud to the depth to which the leaves were bleached. There then was about 2½ inches of water. the rest of the plant emersed & erect.

Next, lot 2, from the locality No 3 of the first lot sent; a ditch now entirely dry. Before, the leaves were ~~[illegible]~~ erect, now evidently in consequence of the ditch drying up, the leaves spread on the ground in every direction. You will know this lot containing perhaps 15 to 20 specimens by their being middle size say 9 to 10 inches high.

Lot 3. from a new locality is wrapped up in broad printed paper! From ~~the edge of~~ a pond which mostly has water in, but is now dry. These grew on the edge & were erect.

Lot 4. from the middle of the

same pond where, when the lot 3 were in water, the roots of these must be at least 18 inches under water. This lot is wrapped up in narrow black paper. The old leaves seem to have much decayed, the young ones coming on. With respect to the leaves of all these plants, they seem to me to be all more or less keeled on the X upper surface, *the young leaves, however, more than the old*. There seem to be some variations in the shape, &c, of the spores and spore-cases. But I have not time to examine. I wish I could do more for you here; tomorrow I leave for the Isles of Shoals, Off Portsmouth, N.H., to stay perhaps 2 months. When I come back I shall be glad to look again. I sent a couple of specimens, a few days ago, but have not heard of their arrival. I shall be very glad to hear from you about these plants. If you write, direct to Appledore House, Isles of Shoals, Portsmouth New Hampshire.

Ever Yours truly

Wm M. Canby

Dr. Geo. Engelmann
St. Louis
Mo.

Recd Aug 23
Ans Sept 18

Appledore Isles of Shoals
Off Portsmouth N.H.
Aug. 18th 1866

My Dear Sir,

I have your very interesting letter of the 12th. & in answer to your inquiries about the Isoetes No. 1. I have to say that it grew in a small ditch along the R.R. (Baltimore) and that one of the others, I. Engelmanni, grew within 10 or 15 yards of it. I noticed on the plants the ligulae & vela which you speak of but had not time for critical comparison. I expect to be home in 2 or 3 weeks and as soon afterwards as I can will get some more for you.

As you supposed a rain after very warm & dry weather started the central growth in the largest specimens of I. Engelmanni.

Whenever I can obtain an opportunity I will investigate the relative number and position of macro- & micro-sporangia.

Thanks for the localities of I. lacustris & I. echinospora. It seems somewhat doubtful now if I get to the mountains; but if I do I will get a lot for you if found.

Will keep an eye to Nuphar too. I have never seen any with other than yellow flowers.

Are there any salt or brackish water Isoetes?

We have here Juncus Greenii & Gerardii but not militaris. The two latter grow in New Castle Co, Delaware. Also here Potentilla Penn^a Sagina nodosa. Elymus mollis & other interesting plants.

I shall be glad indeed to get your photograph when convenient to send it.

Have you Sedum Nevii growing? I can send it to you alive if you wish. I got it in S.W. Virginia in 1858.

Truly Yours,
Wm. M. Canby

Dr. Geo. Engelmann
St Louis, Mo.

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ft. 1 75 90 — 4 10

K 15 — 5 = 2.70

O 60 — 15 = 2.76

O 3 — 20 = 6

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Mr. Sartor Chi 2 k

Rec^d Sept 18
Ans^d

834 Market St Wilmington Del
Sept 13 '66

My Dear Sir

I sent you a few days since a package of specimens of Isoetes collected on the muddy shores of Wicomico river, E. Shore of Md. I have since been attacked by a billious complaint and have been entirely unable to examine some I brought home. I remember having given some to Mr. Durand. one or two years ago and it * is just possible that the specimen of I. muricata which M. Durieu wrote of having received from me may have come from this locality. You can tell at once by examination what species these plants belong to.

I got no chance to get Isoetes in N. England.

I hope to be well enough in a few days to get the strange species with keeled leaves for you.

I am in bed and cannot write more or more legibly

Truly Yours Wm M. Canby

Dr. Geo. Engelmann
St Louis Mo.

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Rec. Sept 25
Ans. 28

834 Market St. Wilmington Del.

Sept. 21st 1866

This was written before he could have had mine of Sept 18

My Dear Sir

Today I went out and got for you the Isoetes wh. you desired to have about this time. I got but few specimens but I trust they will be sufficient. One of them is a perfect giant - by far the largest specimen of the genus I ever saw. I hope you may have some to grow as the locality may be sometime destroyed - being only a ditch by the side of a railroad. The package goes today

Ever truly Yours

Wm. M. Canby

Dr. Geo. Engelmann St. Louis. Mo.

I have had no chance at all to examine riparia

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Recd Sept 26
Ans — 28

Wilmington Sept 22 '66

My Dear Sir,

Just as I am going away from home your letter arrived. I answer hastily but I hope sufficiently full for your purposes. Isoetes saccharata grows on the shores of Wicomico river about 1 mile below the town of Salisbury. Maryland. (E. shore) I should have said that the bed is gravel covered over by a very thin layer of mud deposited by the tide. Consequently in such a place the plants are (as in I. riparia) alternately covered and uncovered by the tide. The plant is not gregarious rarely growing ~~as near~~ less than one inch apart. Society — Sagittaria pusilla — Tillaea simplex — Hemianthus micranthemoides, &c. First found Sept.

15th 1863. I am most glad to find it is distinct: for from the appearance of the spores &c. I felt almost certain that it was like nothing that I had seen— But then I had seen very little. I should say that the leaves were always spread out flat on the ground which I attributed to the mud settling on them & weighing them down. Am not certain that it ever went to Durieu but think I gave Durand two or three specimens two years ago.

I. valida grows 7/8 of a mile below Stanton Station on Phil Wil & Balt R.R. in a ditch on right hand side of R.R. going S. I. saccharata on left bank of river. Will ~~write~~ answer more fully your inquiries ~~[illegible]~~ in a day or two.

Yours ever
Wm M Canby

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Rec^d Sept 29th
Ans Sept 4

834 Market St. Wilmington, Del.
Sept. 25th 1866

My Dear Sir,

To day I got Mr. Tatnall to take me round to two or three places, where he formerly got specimens of Isoetes, but unfortunately we could find none. However, I send today a box containing; 1st, large specimens (I. Engelmanni) from a locality different from those hitherto sent from: 2d I. riparia from Delaware river-shore: and 3d on top of these I put a small specimen of Coreopsis bidentoides, Nutt! The latter grows plentifully in the place where I gathered it, and instead of being a dwarf plant, as described, and as indeed Nuttall's specimen is, it attains to 18 inches to 2½ ft in height, with a stem either nearly simple or much branched. I send this thinking it might be interesting, and the Isoetes now, because I fear I shall have no opportunity of gathering any more this season.

Now to answer your last letter more fully. I am very glad you are going to describe our species of Isoetes. Certainly there is no reason why we should be sending specimen after specimen acroſs the ocean, when the thing can be done better at home. I am glad to you have specimens from Mr. Boott, and am now satisfied about I. muricata. If then your letter has been read aright, I. Braunii is the true name of the little New-England species often called I. echinospora, and we really have not that species at all. I enclose with this a specimen received from Mr. J. Macoun,

of Belleville, Canada West, under the
label of "Isoetes lacustris,— Muddy
bottoms of ponds, Hastings, Canada West."
I have also a plant, which were it
worth examination I would send, gathered near the summit of Mansfield
Mt. by Mr. Horace Mann of Concord
Mass. It is a larger plant than I.
echinospora, and look as if it might
be different. Dr. T. J. Allen, of New York
City, has also gathered a very pale or
yellowish green plant in Litchfield
Conn. You can judge whether these
are worth sending for.

The history of Isoetes in this
part of the country is soon told. Specimens had been gathered here prior to
1844, and in a Catalogue published that
year, were called I. lacustris L. In
the fuller Catalogue, (Tatnall's), published
in 1860, two species are mentioned— viz—
I. riparia, and I. Engelmanni— I doubt

whether much was certainly known about these at that time, and think all were probably Engelmanni. Afterwards our River shore riparia was found, and confirmed by you. This was probably about 1861. I cannot remember when I first gathered these species, but think it was this year '61. As for I. saccharata, I first got it about Sept 1st 1863, and once afterwards, besides this year. I feel almost certain that Mr. Durand got some, but knew nothing as to its going to Mr. Durieu That was a mere surmise on my part to account for his saying that he had got a specimen of I. muricata from me. Just as I write, I remember that, some years ago, I got some specimens of Isoetes

MISSOURI B
GEORGE ENG

from N. England, and afterwards, when Mr. Durand requested me to furnish specimens for Durieu, I sent what I then had. One of these New England specimens was probably the I. muricata he got from me. And this reminds me of another curious circumstance. In 1862, I think, I got some specimens from Mr. Bebb, which he had received from Mr. Hall. Some thieves had broken into Mr. Bebbs house in his absence, and finding no plunder, set fire to his boxed up plants. It was discovered in time to save most of them before more than the (of the specimens) ends were burnt or scorched. Among the plants I got, was I. melanopoda, then unnamed. This went to Europe among the rest and as it came home with the label, "I. Engelmanni", I supposed that like other plants the black bulbs ~~were~~ ~~[illegible]~~ had been burnt!

Mr. Durand told me that this mistake caused Gay & Durieu much perplexity and delay. With regard to I. valida, unless I have gathered it some time under the supposition of its being Engelmanni, the first time I ever saw it was when I gathered the first specimens sent you, I believe in June of this year. As I wrote you before, the locality has but few specimens, and I much doubt whether I can get more this year. I shall be unable too to get more of I saccharata this year. It grows 140 miles from here and circumstances are such that I cannot get down there this season again. I hope the riparia I send today will be as ripe as you need. All our species grow scattered, none are gregarious.

I believe now I have answered all your inquiries, except as to Alnus- maritima Ca, I gathered it again in flower, or just out of flower, on the 8 of Sept. – and what is better a plant I moved up to Chaddsford, flowered for me this year for the first time in August. After all I have seen, I have no doubt of its being a regularly fall flowering alder, though perhaps it occasionally puts out a few catkins in spring. I have never seen it growing in mere meadows or swamps as our common A. serrulata does; but by the side of running streams or mill-ponds.

I shall not forget to send you Sedum Nevii. It is up at Chaddsford.

Whenever I can do anything for you do not fail to let me know. Sometimes I am so situated that I cannot

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do as much as I desire; but I am always glad to do what I can.

Very Truly Yours,

Wm. M. Canby

Dr. George Engelmann
St. Louis
Mo.

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Rec Oct 16th
ans Nov 5

Wilmington D. Oct 12th 1866

My Dear Sir

Your letter of Sept. 28th came duly, but I have been too much engaged since to answer it until now. I am very glad that you were pleased with that large specimen of Isoetes valida. truly an apt name It was better it should be in your hands than mine, and it was quite as much pleasure for me to send it, as for you to get it. With regard to length of leaves, as you speak of I. Malinverniana "20 to 24 inches long", I can say that having just gathered some I. Engelmanni, I carefully measured several specimens, one of which had leaves 25 inches in length, while others varied from 21 to 24½. This was of the fronds, and did not include the rootstock. Of this, 6 to 8 inches was in mud. I find all our species seem to grow only where there is a gravel bottom with a coating of mud. Sometimes, as in I. Engelmanni above, the mud is deep, the ditch being partially filled up by soil washed down from above. In other cases, as in the river shore I. riparia, the mud is the sediment deposited by the tide on a gravelly shore. But I dont find the plants in either pure mud or pure gravel.

In answer to your questions – Stanton is six miles S.W. of this place. The water of Wicomico river is, I believe, always fresh at the point where I. saccharata grows. This point is one mile below the town of Salisbury, which is the head of tidewater. The river empties into Chesapeake bay about 22 or 23 miles below the town. Probably there the water is brackish. As for the Delaware, brackish water extends once in long time and after a heavy

S.E. gale, as far up as the mouth of Christiana ck., (the stream on which this place is situated), which is several miles below the place we get I. riparia.

I have got only some ½ dozen halves of I. valida, having sent all I got to you except these. I think I have heard of a new, or rather old locality, from Mr. Tatnall, (who desires his best respects to you), and will see to it next season. I have plenty of Engelmanni & riparia, but little of saccharata. As long as I have any of these however I shall be glad to communicate. I enclose Sedum Nevii which should bloom next spring. It came from rocks, on banks of New river Montgomery Co. S.W. Virginia in 1858. Ever Cordially Yrs Wm M. Canby

rec Oct 16th Wilmington Del. Oct 13 '66
ans Nov 5

My Dear Sir, Since I wrote yesterday your last has come to hand. I answer at once that you may get both together if possible. Mr. Commons specimens were from the same localities as those I sent. His knowledge of them came from me. I have never seen I. riparia any where but in the shores of the Delaware. Two or three weeks since I ~~[illegible]~~ searched for it in a (tidewater) locality on Brandywine Ck similar to the river shore but could not find it. I know not how far above Phila it grows. But both it and I. saccharata have the appearance of enjoying the tide. I ~~[illegible]~~ riparia I have found quite near low water mark, where it must be covered several ft. deep at high water. With regard to I valida, when gathering some plants of Engelmanni two weeks ago from same locality as I sent from early in the season I noticed on at least one specimen that ~~the~~ a few of the leaves were carinate while the majority were plane. We will look further into this species next season. I did not examine the velum of the above. I don't know how to tell lacustris from another species - in fact have never seen a specimen that was authentic.

I. Macoun. Belleville, C.W.
Will send more Coreopsis. It is very difficult to get it with lower leaves on as they rot off before the plant flowers.

Very truly Yours
Wm M. Canby.

Rec Nov 12
Ans Nov 22

134 Market St. Wilmington. Del
Nov. 8th 1866

My Dear Sir,

I have yours of the 5th inst., and am glad Mr. Boott has been of such good service to you, and sorry Bolander has been so tantalizing. —

I will send you specimens of the I. Engelmanni I got in Oct. soon. As the ditch always has water in I suppose the plant, could hardly be called a second growth and if I am not mistaken they are true as above, having the ordinary bases of I. Engelmanni and flat leaves.

Christiana Ck was, as you say, named after queen Christina, but is now always called as above or sometimes simply Christeen. Probably the subjection of the country

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by the Dutch and its subsequent cession to the English may have caused the corruption of the name. The Swedish settlement was called Christinahamn but was afterwards named Willingtown after an English man Willing and was then corrupted to Wilmington.

I ~~discovered~~ detected Coreopsis bidentoides in our Delaware locality last year. Telling Mr. Commons of it, he went to get some this year and found some plants with small ray florets! He gave me a fragment of a specimen which I sent to Dr. Gray, and has promised me more for yourself and others.

All our Isoetes die down in winter and sprout again as warm weather comes on. We have detected no submerged ones such as the N. England species.

Mr. Tatnall is now engaged in the Nursery business and is devoted to it and I hope doing well in a pecuniary way. I believe he has never cultivated the Sagittaria variabilis var flore pleno, and has very much given up Botanical pursuits.

Very Truly Yours

Wm. M. Canby

Dr. Engelmann
St. Louis
Mo.

P.S. I have been trying for a year or two to find some one who collects Isoetes lacustris in order that I might get a good specimen or two for comparison. If you know of such a one will you be kind enough to give me his address when you have occasion to write again.

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Rec: Nov 30
Ans Dec 14

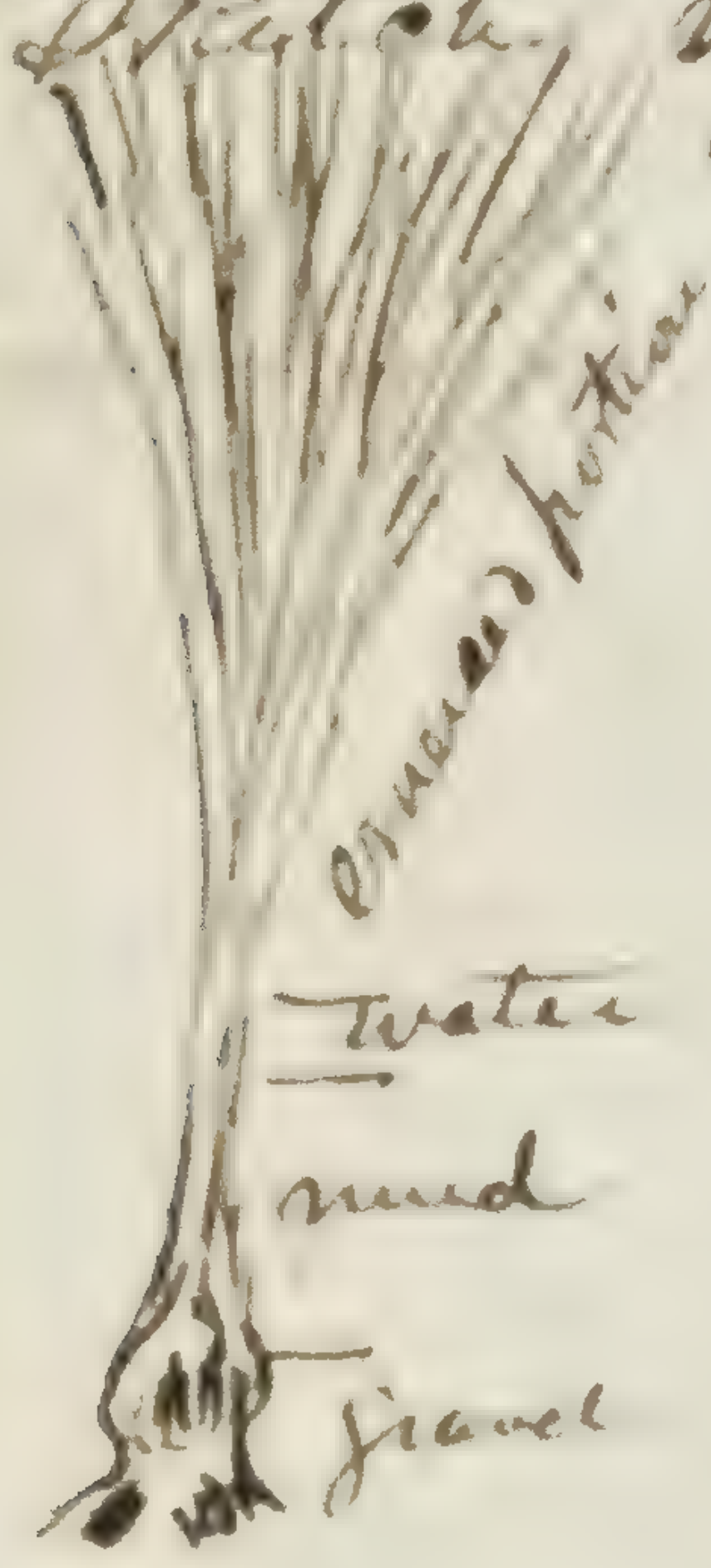
Oakes says he sent to Canby
1865 Isoetes from Horsford
Seeds sent by J. Tuckerman
Alum marked

Wilmington Nov. 27 1866

My Dear Sir,

I have yours of 22d, today, and while I have time to think of it, will answer. To illustrate replies to your questions of localities, &c, I have drawn a rude map of New Castle Co. in this state. The Christiana Ck coming from the west, and the Brandywine from the North, unite at Wilmington, and soon reach the Delaware. The first flows through a comparatively level country, the character of which is well indicated by the name of one of the small streams, viz White clay creek. This white clay is sometimes very stiff (pure), and sometimes interspersed and more or less mixed with patches of gravel or sand. This country extends almost throughout the county below the range of hills marked on the map, and is dotted all over with depressions which are very often ponds or swamps, and in which grow many of our choicer plants, which are not found in the hilly or rolling country in the Northern part of the county. The latter however ~~in~~ which ~~are~~ is a strictly prim itive formation, produces a good many plants, whose range extends, much farther North. Of another character still are the alluvial meadows or marshes along tide-water. We may perhaps well consider another, to be the shores of tidewater streams. We may thus say that our county flora is made up of plants of 5 pretty well marked and distinctive classes or floras, viz - 1st the flora of the flat clay or sandy part, which might be distinguished as the Magnolia district, as that tree is universally found there and nowhere else. Here are also found many New Jersey & Southward plants, such as Ascyrum stans, Carex gigantea &c &c. 2nd The hilly district in which ~~is~~ are found most of the Pennsylvania plants of Darlington's Flora, and some Mountain ones. 3d the alluvial meadows which contain nothing remarkable 4th The tidal shores on which grow Nuttall's "tidal mud flora" and 5th (not mentioned above) the salt water district in the S.E. part of the county where are found Bryzopyrum, Spartina juncea, &c. It is with the 1st and 4th of these that we have now to do. Now in 4th district, at the place marked 1 on the map, Isoetes riparia grows and in this district are also found many of the plants you mention viz. Eriocaulon, Elatine, Sagittaria pusilla, and calycina, (the latter I have also found on tidal mud at Princess Anne Md.) &c. I. saccharata also grows in the same kind of a district 150 miles away and here too are found all the above except S. calycina and in addition Tillaea simplex Herpestis Monnieria &c. These 2 species of Isoetes, therefore strictly belong to the tidal mud flora.

The other two, Engelmanni and valida, belong to the clay district, but so far as I have observed are only, or at least mostly, found where there is more or less of a gravelly bottom. The original I. valida grows at 3 on the map; here I got the large specimen I sent you; but close by, I got specimens which you pronounced I. Engelmanni. At No. 4 on map I got the early ripe (June) Engelmanni. There is no valida there. But at 2. is the swamp where the Octaken specimens were gathered. Now at this place only, so far as I know, I. valida and I. Engelmanni grow together. At 2. 3. & 4. the plants all grow in ditches. At 2 I have gathered specimens from the same ditch, some of which you have pronounced one plant and some the other; and moreover I am very certain that I have got some specimens there in Oct., some of which had keeled leaves, and others flat ones. As to the leaves of the last specimens sent I cannot say whether they were flat or keeled. These plants all grow in the same way, that is as in the sketch, the bulbs resting in gravel or sandy clay, the mud 5 to 7 inches on this, then ½ to 2 inch, water & the remainder say 3/5 of the length emersed.



The swamps around are Magnolia or Cranberry Sphagnous swamps. Other characteristic plants are Rhus venenata, Solidago neglecta &c.

I have no doubt that both species continue to ripen spores throughout the season in favorable situations though Engelmanni may be the ~~first to~~ earliest ripe. I hope next year

I may have a chance to examine more closely and take fuller and more accurate notes than I could do during the past season. Oftentimes I had barely time to get the specimens and no time at all to examine them. At all events let me know whenever you wish me to do anything, and if it is possible I will attend to it.

One point while I think of it. Has the relative length and bredth of the sporangia any thing to do with differences of I. valida and I. Engelmanni or do these vary with age in both species. My impression is in favor of the latter.

Thank you very much indeed for the promised set of European Isoetes. I dont know any thing it would give me more pleasure to have.

Oh, I had forgotten to say that Mr. Commons's few specimens of I. Engelmannii, gathered on the rocky hill-side along Brandywine Ck., are the only ones

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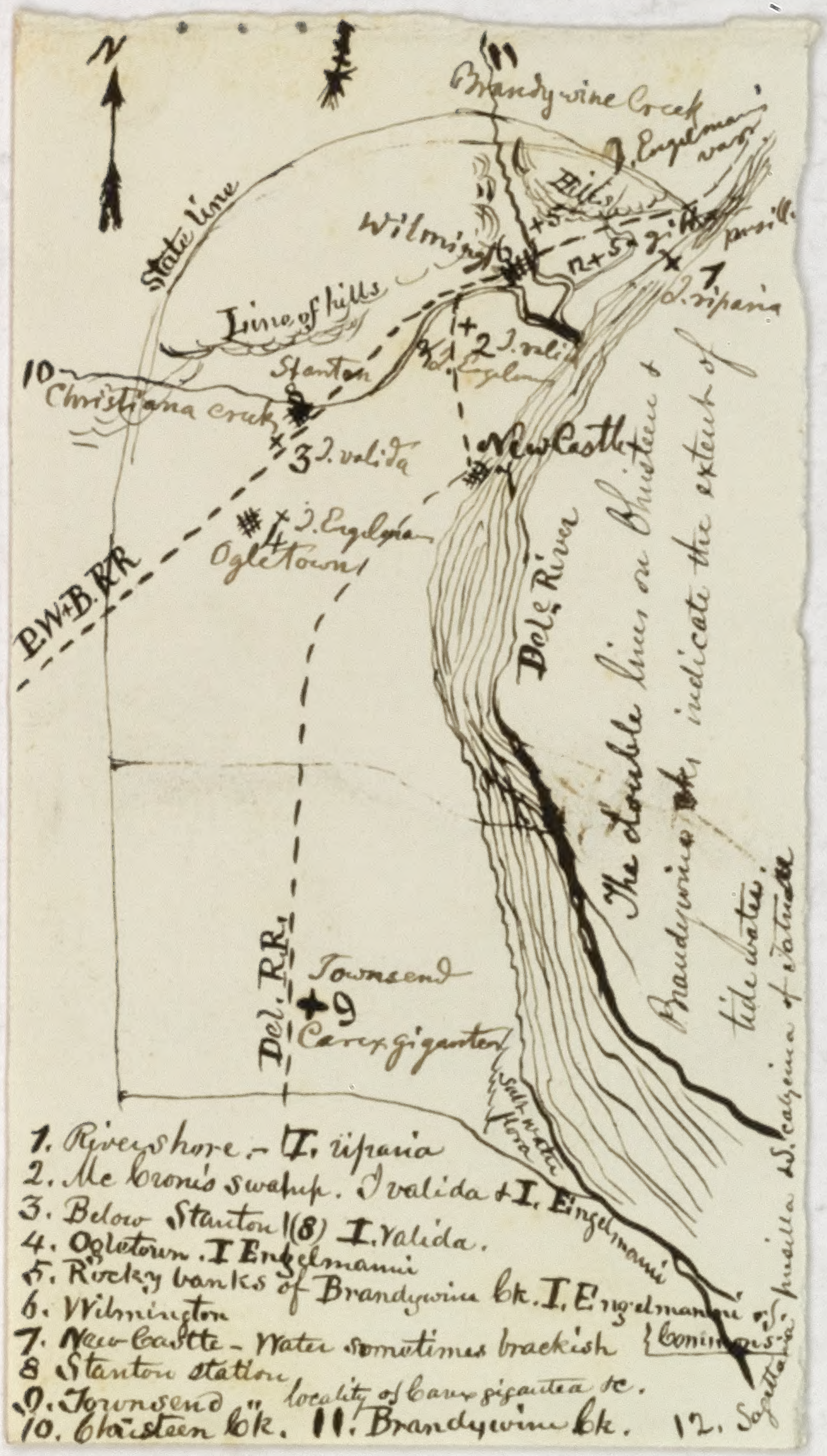
yet found in the hilly district.

Very truly Yours

Wm M. Canby

Dr. Geo. Engelmann
St Louis
Mo.



The double lines on Christiana & Brandywine cks. indicate the extent of tide water.

1. Rivershore. – I. riparia
2. Mc Cronis swamp. I valida & I. Engelmanni
3. Below Stanton (8) I. valida.
4. Ogletown. I Engelmanni
5. Rocky banks of Brandywine ck. I. Engelmanni v. {Commons's
6. Wilmington
7. New Castle – Water sometimes brackish
8 Stanton station
9. Townsend " locality of Carex gigantea &c.
10. Christeen ck. 11. Brandywine ck. 12. Sagittaria pusilla & S. calycina